

The Continuator

A Newsletter of the College of Continuing Education

November, 1982



Benefits Tighten Up! !

Congratulations to those Veterans who have recently matriculated! As of this date, 50% of those vets notified have filed their applications and been accepted into the various CCE programs. They will be happy to learn that their benefits will continue throughout Winter Quarter. Will yours? ? ?

As we are beginning to get phone calls from those of you who have not received checks, it is imperative for us to note that if you are attending less than 1/2 time (5 credit hours or less), you must notify the OVA quarterly so that we can correctly reflect your academic status (credit hour/contact hour). Twenty-one people were recently notified that they had failed to update their information sheets for Winter Quarter and this will result in a delay of benefit checks. I am amazed that some veterans are still unaware that they are eligible for payment of VA benefits for one or more courses. Veterans do not have to attend full-time to use their education benefits! If you are attending less than 1/2 time and have not registered for benefits, call the **OVA today at 475-6641.**

Remember your earned educational entitlement is available regardless of your employer's reimbursement policies. They are

your benefits, use them or lose them! !

New Bills? ? A possible new GI Bill by 1985 . . . possible 7% increase in educational benefits by Nov. '82 . . . possible increase in Vocational Rehabilitation benefits . . . Carey vetoes free tuition in New York State for Veterans . . . What's in HR 7048? ?

For more information on these and other issues, contact the Office of Veterans Affairs. We are in a new location (as of 11/81) next to the RITskellar in the College Union. To service the needs of Veterans and their dependents, our office is open from 8:00 a.m. until 8:00 p.m.; except Fridays when we close at 4:30 p.m.

Reminder

Are there areas of interest you would like to see addressed? Contact Andrea Schaefer, Editor, The Continuator, 475-2953.

It's Never Too Late!

If you missed getting into "The Management Process" this Fall, we have good news for you.

A new section of the three quarter, 14-credit course in supervision and management will be starting up this Winter Quarter and will continue through the Spring and Fall.

Upon completion of the course, you will receive a **Management Certificate**. All 14 credits may be applied toward a Management Diploma or an Associate or Bachelor's degree in Business Administration or Management from RIT's College of Continuing Education.

This section will run on Wednesday evenings, from 6:35 to 10:10 p.m. on the Henrietta campus, Building 01, Room 3355, beginning December 1st.

If you would like more information; please call Lynda Rummel, at 475-2126.

Make Note of New CCE Phone Numbers

During the week of December 20, 1982 the CCE Offices located downtown at 50 W. Main Street will change from a 475 exchange to 262.

The CCE numbers on campus will remain the same. For your information this is a listing of the most frequently called numbers.

Henrietta Campus:

General Information
Advising

City Center at 50 W. Main

City Center Receptionist
Business and Management Studies
Humanistic Studies
Technical Studies
Cable T.V. Course Information
CCE Scholarship Information
External Program Development
Energy Education & Training
Summer Session

Will Remain the Same

475-2234
475-2471

NEW NUMBERS

262-6266
262-6264
262-6287
262-6289
262-6263
262-6261
262-6286
262-6279
262-6274

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(Levinson) can be achieved with the help of a special woman (helpmate) or a mentor, but essentially success is attributed to the character of the individual man. At mid-life, the quest may be modified (after a period of reevaluation and "taking stock") by an increasing awareness of the values of intimacy, nurturing, and caring. These values are not seen as "feminine" (i.e., "childlike and intuitive), but are viewed as mature and "generative" (Vaillant).

The path taken by women appears to be quite different, and, Gilligan argues, traditionally has been viewed as reflecting a deficient moral character. Raised to nurture and promote intimacy, and typically having spent most of their early adulthood in caretaking (of both children and spouse), women arrive at mid-life seeking a clearer separate self identity and greater independence. It is a sad irony that in mid-life, at the point where the developmental paths of men and women may cross, each may view the new interests of the other (in intimacy or independence) as happening too late or as violating the original "contract."

This is an important book. The writing is scholarly; the thinking is careful (a friend of mine complained about "overkill," but I see it as "thorough"). Although Gilligan's view is perhaps a bit reductionistic in that the single variable of "moral concern" is seen as explaining and accounting for a vast number of differences in the development and behavior of men and women, "moral concern" is a helpful umbrella concept that can be broken down into more specific and useful component concepts such as "gender identity" and "role expectations." Her view of the alternative developmental paths for men and women seems to capture the experience of many women as they know it—a counselor whom I know who works with women's groups reported that Gilligan's concepts could be applied to most of her clients.

Perhaps most importantly, Gilligan legitimizes the developmental history of women by tracing that history to an alternative value system, rather than to deficient character. Men and women are seen as operating

out of, and in terms of, significantly different world views. The values of women are not viewed as childish or immature, but simply as alternative. This perspective offers a "meta-perspective," so to speak, to those of us who find ourselves, as we often do in mid-life, enmeshed in battles with our spouses or opposite-sex friends, bosses, or employees, over the inappropriateness, immorality, or mystifying nature of their "ethical" behavior. Perhaps, of course, their behavior

is immoral or inappropriate . . . ; but, we are more likely to have a chance at resolving these conflicts if we see that our mutually unacceptable and mystifying behaviors are due not to badness, deficiency of character, or a "wrong" set of values in some supposedly universal and culturally consistent value system, but as springing from legitimately different "moral concerns," each of which is significantly incomplete.

Lynda Rummel received her Ph.D. degree (with honors) from the State University of New York, Graduate Center at Buffalo, in 1975. For the past year she has served as Assistant Professor and Chairperson, Management Development Programs, in the Division of Business and Management Studies of the College of Continuing Education. Her major areas

of interest are communication (interpersonal, small group, and organizational), cognitive psychology, research methods and statistics. Before coming to RIT, Lynda worked as a consultant, as a boatbuilder and as a lecturer and assistant professor at two different universities.

A Proposal: To Broaden Present Concepts of Mathematics by Listening to the Mathematics Questions Posed by Women

Frances Rosamond, Ph.D.

The purpose of this paper is to raise as an issue the possibility that women pose different mathematical questions than men do. There are sufficient reasons—coming from our observations as teachers and from our research literature—to support an investigation of this question. Secondly, I describe two alternative research methods for examining the issue. Finally, I offer an invitation to colleagues teaching mathematics to adults to participate with me as fellow researchers in this continued inquiry.

Carol Gilligan, in her concept of moral development expanded to include an ethic of care and connection, offers us a paradigm with which to examine the ways women make meaning in mathematics. Gilligan describes an interview of a young girl's persistently negative response to the Kohlberg dilemma, "Should Heinz steal the drug to save his dying wife?" The girl's behavior is negatively interpreted with a low score on Kohlberg's scale of moral development.

Gilligan cogently argues that the girl is not responding to Kohlberg's question at all, but instead has generated an entirely different question out of a different construct

of the dilemma situation. Morality for her exists not in terms of either laws or rights, but instead in terms of responsibilities and relationships. Hence, her response is not some conscious or unconscious attempt to evade Kohlberg's question. Rather, it reflects her assumption of an every-day reality of "connection" that appears in contrast to more abstract notions of law and structure.¹

A parallel exists between the above interview, and Gilligan's analysis of it, and what often happens in mathematics problem-solving. A girl's reluctance to apply in rote fashion some algorithmic approach is interpreted negatively as as her failure to think abstractly, or alternatively, to take risks. An implicit accusation is that the girl is evading doing the problem (and thereby saving face because she knows, consciously or unconsciously, that she is incapable of solving it). I believe that the more revealing interpretation is that the girl has generated and posed a different question entirely.

My own research and some of the literature on such research suggests that there is indeed a discrepancy between what males

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and females "see" in mathematics problems. Women tend to "experience" a problem, to clarify its language often in the context of relationships), and to relate the problems to their personal lives before being able to focus on the problem being asked. Like the girl in the Kohlberg experiment, women have questions of their own that must be worked through before they can move on to the given question in the problem.

David Henderson, Cornell University mathematician, writes, "Recently, I was thinking back over the times that my perception of mathematics had been changed by the insights or questioning of a person in my class. Suddenly, I realized that in almost all of those cases the other person was a woman or (someone) from a different culture than my own. I don't think that this is just a coincidence."²

Gestalt psychologist Abraham Luchins and mathematician Edith Luchins report that girls tend to interpret the instructions for their water jar and geometry experiments differently than do boys. In a personal letter to me, Edith Luchins wrote, ". . . I am intrigued by your reference to a sense of responsibility and freedom through creating mathematics and the notion of an evolving its language often in the context of mathematics. So many women students, we found, were repelled by the idea that all is cut and dried in mathematics."

Mathematics educator Dorothy Buerk recently completed a study in which she worked with articulate, intelligent, math-avoiding women whose conception of mathematical knowledge was dualistic but whose perspective on the rest of the world was at "high Perry position," that is, one of believing something sufficiently to make a commitment about it, while at the same time recognizing that other reasonable people might take a different stand. She found that those women avoided mathematics as a body of facts to be recalled rather than as a discipline involving relationships that one can work through. Buerk quotes one of her students, "You were always replicating someone else's ideas.

The questions were never mine."³

I propose we continue the investigation of concepts of mathematics by listening to the questions women ask. This research can provide a deeper understanding of the beliefs and feelings that drive women's mathematical behavior. The research can also broaden our conceptualization of mathematics itself. Henderson describes one basic problem in the situation, "Over recent centuries the people in charge of mathematics, as we culturally define it, have been mostly Western (white) upper-middle class males. So it should not be surprising if this has instilled a bias into our conception of mathematics. I see evidence for this, but I do not claim to see it all clearly."⁴

We know that generating good questions is crucial in the development of mathematics. David Hilbert's list of problems presented at the 1900 Mathematics Congress set the direction of research for this century. Carol Jacklin claims that "in question-generating we can expect to see a further change in the content of the discipline as women enter each field."⁵ Thus, this investigation will give insights into the ways in which the development of mathematics is enhanced by the special, perhaps unique, contributions of women.

Further, a look at the process of forging connections may shed light on such typical and puzzling forms of disconnectedness as the student who does poorly in math class and on tests but does sophisticated ratio problems outside of school. In educational assessment, a recognition of a feminine construct of mathematics may result in assessment materials that indicate in more revealing ways the mathematical capabilities of both sexes.

The procedure of the investigation could take at least two forms. First, I will examine materials already produced that can reveal sex-differences in mathematical problem-posing. Some sources for such materials are transcripts, data, and papers obtained by researchers in the course of their own research. These will provide a variety of methods and populations. For example, I could look at protocols

of pairs of students solving math problems, at concept maps that indicate the different relationships students see among and between concepts, or at papers written by mathematics students in which they analyze mathematical situations.

A second means will be to design "situations" or "environments" out of which mathematical questions can be generated. These situations will be presented to various audiences under several guises. This research strategy can present these situations to intellectually sophisticated women who have been away from mathematics for many years but who now are willing to investigate math ideas. My experience has been that these women are reflexive in their thinking and articulate enough to describe their thought processes well. They can be encouraged to push their "wrong" questions to a conclusion.

One way such questions may be elicited is through an experiment as simple as the following, one which I currently am conducting in my calculus class. We are studying continuity so I told the following relevant story to the class. We did not discuss the story but told them they would have to write about it in a few days.

"Once upon a time, long, long ago, far, far away, a monk lived at the foot of a mountain. At sunrise the monk would begin to walk up the mountain arriving at sunset. He would meditate all night. The next day at sunrise he would begin his trip down the mountain, arriving home at sunset. Is there a place where the monk is at the same place at the same time of day both days?

The next day I told the students I was interested in the thoughts and questions they had asked themselves they had asked themselves in their attempts to clarify the scenario. I said, "Write down your first thoughts, . . . what came to mind?" Responses, I found, occurred in three forms. In the first kind, the responses were heavily embellished or personalized. These students sought to flush out the meagre story of the monk before looking at the inherent mathematical issues. Here are two examples of this very contextual

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oriented responses, the first from "Sue":

I thought about the time of day, the position of the sun, the pace he was walking at. I questioned how steep the mountain was, if he was crippled or not. I wondered if the force of gravity had any affect on the time it took him to walk, if the monk walked the same path both times and if he stopped at the same point each day, was it the same time. I questioned the weather. If it was icy, he may have fallen and this would change the time it took him to travel the mountain side.

The second type of response, from "Bill," raises the mathematical issues only. It is barebones factual analysis of the situation. An example of this non-contextual response is the following:

*Did he walk the same path?
Did he walk the same pace?
Was the path that he walked a straight one?
Did the sun rise and set at the same time each day so he would leave at the same time?*

There is a third type of response that combines elements of the above two.

The two questions to be explored here, of course, are whether the patterns of responses recur consistently over large numbers of students, and secondly, whether one pattern tends to emerge with significantly greater frequency with either sex. At any rate, that is the hypothesis I am

pursuing.

I will be reporting on my findings in the Spring issue of CERN, and I would be delighted if any of you are sufficiently interested to conduct the same (or a similar) experiment and forward your findings to me. Perhaps we can advance this line of inquiry together.

Notes

¹C. Gilligan, major address at the American Educational Research Conference, New York City, March, 1982.

²D. Henderson, "Mathematics and Liberation," in *For the Learning of Mathematics*, Winter, 1981.

³D. D. Buerk, *Changing the Conception of Mathematical Knowledge in Intellectually Able, Math-Avoidant Women* (unpublished dissertation, SUNY at Buffalo, 1981).

⁴Henderson, *op. cit.*

⁵C. Jacklin, "Feminist Research and the Scientific Method," a paper presented at the International Congress for research and Teaching Related to Women, Montreal, July, 1982.

⁶The names of the students are fictionalized.

Frances Rosamond received her Ph.D. from Cornell University in 1981 specializing in mathematics education. While at Cornell she was instrumental in establishing and funding (through a proposal she wrote to the Sloan Foundation) a Mathematics Support Center in the Department of Mathematics. A purpose of the successful MSC is to promote more interest in mathematics at every level and to support

anyone involved in doing mathematics. Dr. Rosamond helped develop and teach a combined calculus and computer course in the Department of Education. In addition to developing and teaching the course for women in mathematics, she has been part of many workshops and programs designed to give the lay person an introduction to mathematical ideas.